

**What is claimed is:**

1. A method for determining the activity of a cell cycle regulatory factor comprising the steps of:

5 preparing a sample for measuring a cyclin-dependent kinase/cyclin complex from living cells;

reacting adenosine 5'-O-(3-thiotriphosphate) (ATP- $\gamma$  S) with a substrate for the cyclin-dependent kinase in presence of the sample in order to introduce a monothiophosphate group into a serine or threonine residue of the substrate;

10 labeling the substrate by coupling a labeling fluorophore or a labeling enzyme with a sulfur atom of the introduced monothiophosphate group;

measuring the amount of fluorescence from the labeling fluorophore labeling the substrate, or reacting the labeling enzyme labeling the substrate with a substance which generates an optically detectable product by reaction with the labeling enzyme and optically measuring the amount of the generated product; and

15 calculating the activity of the cyclin-dependent kinase from the measured amount of fluorescence or the measured amount of the generated product with reference to a pre-produced reference curve.

2. The method according to claim 1, wherein the cyclin-dependent kinase of the complex is selected from the group consisting of CDK1, CDK2, CDK4 and CDK6.

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3. The method according to claim 1, wherein the labeling fluorophore is a fluorescent dye.
4. The method according to claim 3, wherein the fluorescent dye is FITC.
- 5 5. A method according to claim 1, wherein the labeling enzyme is peroxidase.
6. A method according to any one of claims 1 to 5, wherein the cyclin-dependent kinase of the complex is CDK1 or CDK2 and the substrate is histone H1.
- 10 7. A method according to any one of claims 1 to 5, wherein the cyclin-dependent kinase of the complex is CDK4 or CDK6 and the substrate is Rb whose cysteine residue is substituted by alanine.
8. A method of diagnosing a cancer based on a result  
15 obtained by determination according to a method as set forth in claim 1.
9. A method according to claim 8, wherein the cancer is stomach cancer, colon cancer, breast cancer, lung cancer, esophageal cancer, prostate cancer, hepatic cancer, kidney  
20 cancer, bladder cancer, skin cancer, uterine cancer, cerebral tumor, osteosarcoma or myeloma.